

What is claimed is:

1. A surface acoustic wave element including:
a sapphire single crystal substrate;
a hard layer formed on said sapphire single crystal substrate and having a composition containing $(Al_{1-x}M1_x)_2O_3$ ($0 \leq x \leq 0.5$) in which at least one element M1 (M1 = B, Ga, In, Ti, V, Cr, Mn, Fe, Co) is added to sapphire; and
a piezoelectric layer formed on said hard layer.
2. A surface acoustic wave element according to claim 1, wherein said hard layer has a corundum crystal structure.
3. A surface acoustic wave element according to claim 1, wherein said piezoelectric layer has a composition containing $(Al_{1-x}B_x)N$ ($0 \leq x \leq 0.5$) in which boron nitride is added to aluminum nitride, and has a wurtzite crystal structure.
4. A surface acoustic wave element according to claim 1, wherein said piezoelectric layer has a composition containing $(Zn_{1-x}M2_x)O$ ($0 \leq x \leq 0.5$) in which at least one element M2 (M2 = Li, Mg, Fe, Co., Ni, Cu) is added to zinc oxide, and has a wurtzite crystal structure.
5. A surface acoustic wave element including:
a single crystal substrate having a composition containing $(Al_{1-x}M1_x)_2O_3$ ($0 \leq x \leq 0.5$) in which element M1 (M1 = B, Ga, In, Ti, V, Cr, Mn, Fe, Co) is added to sapphire, and having a corundum crystal structure; and
a piezoelectric layer formed on said single crystal substrate.
6. A surface acoustic wave element according to claim 5, wherein said piezoelectric layer has a composition containing $(Al_{1-x}B_x)N$ ($0 \leq x \leq 0.5$) in which boron nitride is added to aluminum nitride, and has a wurtzite crystal structure.
7. A surface acoustic wave element according to claim 5, wherein said piezoelectric

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layer has a composition containing $(\text{Zn}_{1-x}\text{M}_2\text{x})\text{O}$ ($0 \leq x \leq 0.5$) in which at least one element M2 (M2 = Li, Mg, Fe, Co., Ni, Cu) is added to zinc oxide, and has a wurtzite crystal structure.

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8. A frequency filter including:

a first electrode formed on the piezoelectric layer equipped with any one of the surface acoustic wave elements of claims 1 through 7; and

a second electrode which is formed on said piezoelectric layer and which converts to an electrical signal by resonating to a specific frequency or a frequency of a specific band of a surface acoustic wave generated in said piezoelectric layer by an electrical signal applied to said first electrode.

9. A frequency oscillator including:

an electrical signal application electrode which is formed on the piezoelectric layer equipped with any one of the surface wave acoustic elements of claims 1 through 7 and which generates a surface acoustic wave in said piezoelectric layer according to an applied electrical signal; and

a resonance electrode which is formed on said piezoelectric layer and which resonates a specific frequency component or a frequency component of a specific band of the surface acoustic wave generated by said electrical signal application electrode.

10. An electronic circuit including:

the frequency oscillator according to claim 9; and

an electrical signal supply element which applies an electrical signal to the electrical signal application electrode provided in said frequency oscillator; wherein,

a specific frequency component is selected from the frequency components of said electrical signal or the frequency components of said electrical signal are converted to a specific frequency component, or a prescribed modulation is imparted to said electrical signal followed by a prescribed demodulation or prescribed wave detection.

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11. An electronic apparatus including at least one of the frequency filter according to claim 8, the frequency oscillator according to claim 9, and the electronic circuit according

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